Animas - La Plata Project

Colorado – New Mexico

Draft Supplemental Environmental Impact Statement

Technical Appendices

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U.S. Department of the Interior
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Water Use Scenarios For Southern Ute and Ute Mountain Ute Indian Tribes, Colorado

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WATER USE SCENARIOS

FOR SOUTHERN UTE AND UTE MOUNTAIN UTE INDIAN TRIBES, COLORADO

Prepared for

Southern Ute Indian Tribe

by

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ANIMAS - LA PLATA PROJECT EIS
WATER USE SCENARIOS FOR
SOUTHERN UTE AND UTE MOUNTAIN UTE INDIAN TRIBES

A. PURPOSE OF REPORT

This report is intended to provide tribal water use scenarios to assist with the preparation of an environmental impact statement for the current efforts to implement the 1986 Colorado Ute Indian Water Rights Final Settlement Agreement and the Colorado Ute Indian Water Rights Settlement Act of 1988. The Settlement Agreement and the Settlement Act together quantified, *inter alia*, the Colorado Ute Indian Tribes' rights to water in the Animas and La Plata Rivers. The scenarios in this report, therefore, are not intended to address the quantification of water rights but instead are intended to provide examples of the types of uses to which the tribes may put their water. As the future unfolds, however, the tribes may decide to use their water in completely different ways. The scenarios do not represent tribal policy for using their water, and should not be considered binding on the tribes in any way.

B. MUNICIPAL WATER USE SCENARIO

The Decennial Census shows population growth between 1970 and 1990 approaching 3 percent per year on both the Southern Ute (2.7% per year) and the Ute Mountain Ute (2.9% per year) Indian Reservations. More recently, the enrollment of both tribes has been increasing at approximately 1.3% to 1.5% per year [Knight, p. 5; Ute Mountain Ute Indian Tribe, p.28], but the Census Bureau expects Colorado's American Indian population to grow at an average annual rate of 1.9% through the year 2025. Table 1 shows how tribal enrollment would grow in the future, assuming an annual growth rate of 1.9% for 1998 to 2025 [U.S. Census Bureau, PPL-47, Table 3], then declining to an annual growth rate of 1.1% by 2065 [U.S. Census Bureau, P25-1130, Table 2]. If this growth continues as expected, both Reservations will need additional water supplies to serve the new households.

The population centers on both reservations, however, are located away from the Animas and La Plata Rivers. Most tribal members on the Southern Ute Indian Reservation live in the Pine River Valley, north and south of Ignacio. The tribal members and the Town of Ignacio both rely on the tribal water supply system, which draws its water from the Pine River.

On the Ute Mountain Ute Indian Reservation most tribal members live in Towaoc, which is south of Cortez, Colorado. These residents receive their water supply from the Town of Cortez, which gets water from the Dolores Project.

Table 1
Tribal Population Projections

Year	Southern Ute Indian Tribe Population	Ute Mt. Ute Indian Tribe Population	Total Indian Tribe Population	Annual Growth Rate
1998	1,327	1,960	3,287	1.9%
2000	1,380	2,030	3,410	1.9%
2005	1,510	2,230	3,740	1.9%
2010	1,660	2,450	4,110	1.9%
2015	1,820	2,690	4,510	1.9%
2020	2,000	2,950	4,950	1.9%
2025	2,190	3,240	5,430	1.9%
2030	2,400	3,550	5,950	1.8%
2035	2,620	3,880	6,500	1.7%
2040	2,850	4,220	7,070	1.6%
2045	3,090	4,570	7,660	1.5%
2050	3,330	4,920	8,250	1.4%
2055	3,570	5,270	8,840	1.3%
2060	3,810	5,620	9,430	1.2%
2065	4,040	5,970	10,010	1.1%
2070	4,270	6,310	10,580	1.1%
2075	4,510	6,660	11,170	1.1%
2080	4,760	7,030	11,790	1.1%
2085	5,030	7,430	12,460	1.1%
2090	5,310	7,850	13,160	1.1%
2095	5,610	8,290	13,900	1.1%
2100	5,930	8,760	14,690	

Sources: Knight, p. 5; Ute Mountain Ute Indian Tribe, p. 28; U.S. Census Bureau, PPL-47, Table 3; U.S. Census Bureau, P25-1130, Table 2; Dornbusch & Co.

Both reservations, however, currently have an inadequate supply of housing, with waiting lists for members who wish to move into tribal housing. Currently, the Southern Ute Indian Tribe has a shortage of about 237 housing units [Knight, p. 8], and the Ute Mountain Ute Indian Tribe has a 145 families waiting for housing in Towaoc alone [Ute Mountain Ute Indian Tribe, p.27]. Because of this current housing shortage and the expected future growth, the tribes will very likely add substantial new housing in the future.

Both tribes may wish to locate at least some of the new housing supply in areas away from the current population centers, particularly if a reliable water supply from the ALP Project is available. Accordingly, one possible use for ALP water for both tribes is to supply housing developments located away from the current population centers.

The Southern Ute Indian Tribe may wish to locate housing in the Florida Mesa area and in both the Animas and La Plata river basins. The Southern Ute Indian Tribe owns some land in all three area, although some of the suitable land is assigned to tribal members. The Tribe may wish to purchase additional land for new community developments. For purposes of this report we have located three hypothetical 200 unit housing developments near Colorado State Highway 172 on Florida Mesa, in the La Posta area of the Animas River Basin and in the Redmesa area of the La Plata River Basin.

The Ute Mountain Ute Indian Tribe may wish to locate some new housing near the eastern side of their reservation, in the La Plata River Basin. This location would offer access to the employment opportunities in the energy industry near the Colorado - New Mexico state line. For purposes of this report we have located one hypothetical 400 unit housing development in the southeastern corner of the Colorado portion of the Ute Mountain Ute Indian Reservation.

Housing developments with centralized, metered water supply systems will use water for indoor purposes, outdoor landscaping and/or gardens, community infrastructure (grocery stores, gasoline stations, laundromats, restaurants, etc.) and unmetered purposes (fire protection, park irrigation, construction, system losses, etc.). Applying water use rates that are typical for the West or for the country as a whole we estimate that each 100 units in a housing development would use approximately 70 acre-feet per year (afy). For purposes of this report , then, the hypothetical 200 unit housing developments would use 140 afy, while the 400 unit housing development would use 280 afy. These and the other water use scenario discussed in this report are summarized in Table 5.

C. INDUSTRIAL PARK SCENARIO

The Southern Ute Indian Reservation lies just south of the City of Durango, which itself has been growing. The Durango area has two industrial parks, one on the west side of town and one now being annexed on the south side of town, which is almost filled to capacity. Local planning officials believe that there is a long term demand for additional

industrial park space in the area [Roser; Crane]. The Southern Ute Indian Reservation may have an opportunity to develop its own industrial park in the area near Durango, and thereby provide additional space to meet the growing demand. Although the Tribe owns some land in the Animas River Basin a few miles south of Durango, they may wish to purchase land closer to town. Assuming an industrial park with 500,000 square feet of office, light industry and warehouse space, the water use would be approximately 40 acre-feet per year [Billings and Jones, p.16].

D. RECREATION AND TOURISM DEVELOPMENT SCENARIO

Both reservations are located in a scenic area that is a popular tourism destination. The proximity of the Southern Ute Indian Reservation to Durango would allow the Reservation to take advantage of the established flow of tourists and help draw visitors to Reservation facilities. One possibility is for the Southern Ute Indian Tribe to purchase land overlooking Ridges Basin Reservoir and build its own resort hotel complex, including a 300 room hotel, conference center, 18 hole golf course and casino. The hotel would use about 30 afy, assuming 75% occupancy, 2 people per room and 60 gallons per person per day [EPA, p. 23]. The golf course would use approximately 520 afy, assuming 140 irrigated acres, 2.6 acre-feet per acre [Water Wiser], and 70% application efficiency. A 50,000 square foot casino would use approximately 10 afy, based on water use rates experienced at other casinos. Finally, assuming 10% of diversions are used for miscellaneous purposes or are lost in transmission [Wilson and Lucero, p. 11], the total water use associated with this complex would reach approximately 620 afy.

The Ute Mountain Ute Indian Reservation is further from the Durango tourist area than is the Southern Ute Indian Reservation. The Ute Mountain Ute Indian Reservation, however, is adjacent to Mesa Verde National Park (Mesa Verde was carved out of the Ute Mountain Reservation), and additional, less popularized Anasazi ruins are within the Reservation itself. The Ute Mountain Ute Indian Reservation may have an opportunity to establish a tribal visitor center, with a 300 room hotel and 18 hole golf course, to cater to visitors who are drawn by the unique collection of ancient sites in the area. Similarly to the characteristics of the hotel and golf course hypothesized for the Southern Ute Indian Reservation, we would expect water use to be approximately 30 afy for the hotel and 520 afy for the golf course. Adding in miscellaneous uses and transmission losses, total diversions for the Ute Mountain Ute hotel and golf course would be about 610 acre-feet per year.

In addition to the on-Reservation tribal visitor center/hotel described above, the Ute Mountain Ute Indian Tribe has purchased approximately 20,000 acres of ranch land in the La Plata Basin, north of the Southern Ute Indian Reservation. The Ute Mountain Ute Indian Tribe may decide to maintain the ranch operations indefinitely, but in the future the Tribe may decide to establish a resort hotel and golf course on part of their property. The ranches are in a scenic area with easy access to Durango, and the growing demand for recreation in the Durango area may provide the market opportunity for such a resort

hotel. As in the case for the visitor center hotel, we would expect water use to be approximately 30 afy for a 300 room hotel and 520 afy for an 18-hole golf course. With miscellaneous uses and transmission losses, total diversions for the resort hotel and golf course would be about 610 afy.

Part of the ranch properties could also be developed as a dude ranch. Assuming 100 guests for a four month season, 50 staff and 200 horses, annual water use would be approximately 5 afy.

E. ENERGY DEVELOPMENT SCENARIO

Both reservations lie in the northern portion of the San Juan Basin, which is a structural basin that underlies northwestern New Mexico and southwestern Colorado. The Basin contains large reserves of coal, oil and gas, and is the location of many operating coal mines and oil & gas wells. The Southern Ute Indian Tribe is currently producing coal bed methane gas, while the Ute Mountain Ute Indian Tribe is producing oil and conventional gas. The gas production of both tribes is tied into a national gas pipeline network. Both tribes expect their gas production to decline over the long term [Ute Mountain Ute Tribe, p. 29; Richardson].

The Southern Ute Indian Reservation overlies about 16 billion tons of Fruitland Formation coal, about 500 million tons of which lies within 500 feet of the surface [Sandberg, pp. D10 and D17]. The coal in the northern San Juan Basin (where the reservations are located) is generally high-volatile A bituminous to medium volatile bituminous [Ibid.], and is currently being mined for use in generating electric power. Just south of the Southern Ute Indian Reservation the La Plata Mine produces coal for the San Juan power plant near Farmington, New Mexico, which has about 1780 megawatts of generating capacity [U.S. EIA, "Inventory," p. 158].

The Ute Mountain Ute Indian Reservation overlies Fruitland Formation coal deposits, as well. Approximately 14.4 million tons of coal are considered attractive for strip mining [Shomaker, p. 14], but this deposit is thought to be too small to be mined separately. The economic appeal would increase if the deposit were mined in conjunction with adjacent off-reservation deposits [Ibid.].

More recent studies than those cited above have increased the amount of coal considered recoverable in the entire San Juan Basin, implying that the reservations' recoverable resources may be greater than stated above [U.S. EIA, "U.S. Coal Reserves," p. 10]

The tribes' energy resources offer several opportunities for development. Tribal coal could be mined and shipped off the reservations to fuel power plants. The reservations are not presently served by railroads, so the coal would have to be trucked or shipped by slurry pipeline. Tribal coal and/or gas could be burned in on-reservation power plants, and the electricity generated would be transmitted into the power grid. Much of the tribal

coal is deep, and eventually could either be mined by auger or underground mining or gasified in situ. All of these options and perhaps others may be considered by the tribes in the future.

Many of the opportunities to develop energy resources will require water. Surface mining needs water for dust suppression and land reclamation. Coal- or gas-fired power plants typically use water for cooling, as would a coal gasification plant. A coal slurry pipeline would mix pulverized coal with water and pipe the resulting slurry.

For the purposes of this report we have included some of what currently seem to be the more likely opportunities in an energy development scenario. The tribes have not made any decisions about the scenarios discussed in this report and may eventually decide to take a very different approach or may choose not to develop their energy resources at all. If and when the tribes do choose to pursue a specific development opportunity they would need to meet the NEPA and other environmental requirements before implementing any plan.

For the Southern Ute Indian Tribe we have formulated an energy development scenario that includes surface mining of coal and construction of a new 1,000 megawatt (MW) coal-fired power plant. As previously indicated, the La Plata Mine, which supplies coal to the San Juan Generating Station, is just south of the Reservation border. It would be a logical and efficient extension of that mine to begin mining inside the Reservation. Moreover, the Reservation has access to ample Reservation coal reserves or regional gas reserves to supply an additional 1000 MW power plant on the Reservation. The United States Energy Information Administration expects some 32 gigawatts (32,000 MW) of new coal-fired generating capacity and almost ten times that amount of new gas-fired generating capacity to come on-line between 1996 and 2020 [U.S.EIA, "Annual Energy Outlook," p 61]. New coal-fired steam turbine generating units added or projected to be added during the period from 1980 through 2005 have averaged about 500 MW in size [U.S. EIA, "Changing Structure of the Electric Power Industry," p. 133]. Our scenario for the Southern Ute Indian Reservation includes two such units, for a total capacity of 1000 MW. Assuming 11,900 BTU per pound [Shomaker, p. 20], 9,253 BTU per KWH [U.S. EIA, "Annual Energy Outlook," p. 63, and an 85% load, then a 1000 MW power plant would consume 2,900,000 tons of coal per year. The most accessible coal lies in a band between the La Plata Mine on the south up to a point west of the Picnic Flats area on the north.

Both the mining and the power plant would use water from ALP. The mine would use 415 acre-feet per year for dust suppression [Gin], and the coal-fired power plant would use an additional 13,500 acre-feet per year for cooling [Union of Concerned Scientists].

The Ute Mountain Ute Indian Reservation contains less coal and natural gas than does the Southern Ute Indian Reservation. Although in the future some coal could be mined to supply off-reservation power plants, the more likely scenario would be to develop the Reservation's gas to fuel an on-reservation power plant. A power plant could supplement

its supply of natural gas by drawing on other regional gas production in addition to that produced on the Reservation. Our scenario for the Ute Mountain Ute Indian Reservation includes a 200 MW gas-fired combined cycle power plant. Such a plant would use approximately 2,300 acre-feet per year for process water and cooling [Rychlik].

F. LIVESTOCK & WILDLIFE WATER USE SCENARIO

Both reservations contain large areas of rangeland, but the use of this rangeland is limited by the scarcity of developed water sources. The livestock operators could make more effective use of the rangeland if additional watering facilities were installed. Some solar powered wells have been installed in the range area, but other areas do not have access to productive aquifers and would need surface water piped to water tanks. To be most cost-effective, stockwater pipelines could be tied into pipelines that are installed for either housing or energy development. In any event, the number of livestock is limited on both reservations and the potential use of water is only about 15 acre-feet per year on the Ute Mountain Ute Indian Reservation and about 10 acre-feet per year on the Southern Ute Indian Reservation.

In addition, using some of their water to help sustain wildlife is important to the Colorado Ute Indians. The tribes would be interested in providing watering facilities for wildlife, especially where pipelines could be tied into the delivery system to be established for other uses on the reservations. The amount of water to be used for wildlife support would probably be incidental, perhaps in the range of 5 acre-feet per year on each reservation.

G. REGIONAL WATER SUPPLY SCENARIO

Just as the entire West is growing, the San Juan Basin is experiencing its own population growth. This growth will increase the demand for water, both for household use and for the commercial, industrial, recreational and community infrastructure needs that accompany population growth. At the same time, environmental concerns and limited water resources will make it increasingly difficult to find new water supplies in the San Juan River Basin. After tribal needs in the Basin are met and after water for other ALP Settlement parties is provided, other significant new depletions are unlikely to be available. However, until the tribes develop their own needs for their water, they may wish to lease some of their water to satisfy this growing regional demand.

Table 2 shows how population in the 3 county area (La Plata and Montezuma Counties, CO, and San Juan County, NM) has changed between 1970 and 1998. La Plata Country population has doubled in that time, and the population of Montezuma and San Juan Counties has nearly doubled. Growth was not uniform, however, with all three counties showing at least one year of population declines.

Table 2

HISTORIC REGIONAL POPULATION GROWTH
FOUR CORNERS AREA - COLORADO & NEW MEXICO

Year	La Plata County, CO	Annual Change	Montezuma County, CO	Annual Change	San Juan County, NM	Annual Change	3 County Total	Annual Change
1970	19,199		12,952		52,517		84,668	
1971	20,100	4.7%	13,500	4.2%	53,900	2.6%	87,500	3.3%
1972	21,500	7.0%	14,000	3.7%	55,800	3.5%	91,300	4.3%
1973	21,900	1.9%	13,800	-1.4%	58,700	5.2%	94,400	3.4%
1974	22,600	3.2%	14,200	2.9%	61,100	4.1%	97,900	3.7%
1975	23,600	4.4%	15,000	5.6%	64,600	5.7%	103,200	5.4%
1976	25,200	6.8%	15,000	0.0%	68,200	5.6%	108,400	5.0%
1977	26,300	4.4%	15,300	2.0%	71,400	4.7%	113,000	4.2%
1978	27,000	2.7%	15,500	1.3%	75,100	5.2%	117,600	4.1%
1979	27,200	0.7%	16,300	5.2%	78,900	5.1%	122,400	4.1%
1980	27,195	0.0%	16,510	1.3%	81,433	3.2%	125,138	2.2%
1981	28,309	4.1%	17,252	4.5%	85,794	5.4%	131,355	5.0%
1982	29,346	3.7%	17,999	4.3%	88,833	3.5%	136,178	3.7%
1983	30,118	2.6%	18,666	3.7%	91,708	3.2%	140,492	3.2%
1984	30,784	2.2%	19,275	3.3%	91,339	-0.4%	141,398	0.6%
1985	31,371	1.9%	19,210	-0.3%	91,644	0.3%	142,225	0.6%
1986	31,300	-0.2%	19,156	-0.3%	93,577	2.1%	144,033	1.3%
1987	31,288	0.0%	18,726	-2.2%	92,289	-1.4%	142,303	-1.2%
1988	31,313	0.1%	18,693	-0.2%	92,031	-0.3%	142,037	-0.2%
1989	31,695	1.2%	18,592	-0.5%	92,413	0.4%	142,700	0.5%
1990	32,459	2.4%	18,712	0.6%	91,500	-1.0%	142,671	0.0%
1991	33,415	2.9%	19,002	1.5%	93,435	2.1%	145,852	2.2%
1992	34,501	3.3%	19,539	2.8%	94,662	1.3%	148,702	2.0%
1993	35,759	3.6%	20,159	3.2%	96,969	2.4%	152,887	2.8%
1994	37,060	3.6%	20,872	3.5%	98,979	2.1%	156,911	2.6%
1995	38,347	3.5%	21,542	3.2%	99,985	1.0%	159,874	1.9%
1996	39,418	2.8%	21,962	1.9%	102,208	2.2%	163,588	2.3%
1997	40,145	1.8%	22,269	1.4%	103,520	1.3%	165,934	1.4%
1998	40,413	0.7%	22,465	0.9%	106,020	2.4%	168,898	1.8%
1970-98 average annual rate		2.7%		2.0%		2.5%		2.5%

Source: U.S. Census Bureau; Dornbusch & Co.

Table 3 shows how Colorado and New Mexico agencies expect the population of the three counties to continue growing. The agency projections extend to 2025 in Colorado and 2030 in New Mexico. Projections beyond those years are based on the average annual change in population between 1995 and the last agency projection. Although population projections over many years are usually not terribly reliable, these projections illustrate how the regional population could grow dramatically if the expected trends actually materialize.

A growing population would increase the demand for public water supplies. Table 4 shows how the regional water use would grow, assuming the population growth in Table 3 and the 1995 national average water use of 179 gallons per capita per day (gpcd). By comparison, in 1995 Farmington, the largest city in the region, used 274 gpcd, while self-supplied rural households in San Juan County used approximately 70 gpcd [Wilson and Lucero, pp. 114-15]. Use of the national average of 179 gpcd in our projections therefore represents a substantial decrease from the current level of use in Farmington and allows for an increase in water use among rural households that become connected to municipal water supply systems.

The Southern Ute and Ute Mountain Ute Indian Tribes may decide that they would like to market some of their water to satisfy the growing regional demand. The tribes could do this in several ways. First, the tribes might decide to host some of the expected regional growth on their reservations. The industrial park discussed in Section C, above, is one example of how this might occur. Other examples might include vacation home sites, retail facilities or housing developments intended primarily for non-tribal members. These development might be served directly from tribal water supply systems.

The tribal water supply systems serving the new housing developments described in Section B above could also be used to provide water to rural non-Indian neighbors. Scattered non-Indian tracts lie near the path of the hypothetical water supply systems, and these systems could be expanded to serve rural households. Some of these households currently rely on poor quality groundwater or even truck in their water, so the chance to connect to a water supply system would improve their access to a safe water supply.

A second way in which the tribes might decide to use their water to help satisfy a growing regional demand is by marketing its water directly to other regional public water systems. The tribes could either transfer water directly from Ridges Basin Reservoir, or for downstream systems, release water from the Reservoir. Innovative exchanges could allow the tribes to market water to systems taking water from other San Juan tributaries. For example, the tribes could release extra water from Ridges Basin Reservoir to maintain minimum flows in the San Juan River to compensate for extra depletion from some other tributary.

Tribal water could also be used in a similar fashion to enhance a fishery or recreation area. The tribes could either transfer water directly or through exchanges in order to enhance the flows in particular stream reaches.

Table 3
REGIONAL POPULATION PROJECTIONS

Year	La Plata County, CO	Annual Change	Montezuma County, CO	Annual Change	San Juan County, NM	Annual Change	3 County Total	Annual Change
1995	39,190		21,965		100,378		161,533	
2000	44,556	2.6%	24,319	2.1%	108,432	1.6%	177,307	1.9%
2005	50,495	2.5%	27,145	2.2%	116,779	1.5%	194,419	1.9%
2010	56,087	2.1%	30,079	2.1%	125,614	1.5%	211,780	1.7%
2015	60,480	1.5%	33,048	1.9%	135,106	1.5%	228,634	1.5%
2020	63,987	1.1%	35,848	1.6%	145,072	1.4%	244,907	1.4%
2025	66,932	0.9%	38,446	1.4%	154,999	1.3%	260,377	1.2%
2030	73,180	1.8%	42,210	1.9%	164,012	1.1%	279,402	1.4%
2035	80,010	1.8%	46,340	1.9%	175,930	1.4%	302,280	1.6%
2040	87,480	1.8%	50,870	1.9%	188,710	1.4%	327,060	1.6%
2045	95,640	1.8%	55,840	1.9%	202,420	1.4%	353,900	1.6%
2050	104,560	1.8%	61,300	1.9%	217,130	1.4%	382,990	1.6%
2055	114,320	1.8%	67,290	1.9%	232,910	1.4%	414,520	1.6%
2060	124,990	1.8%	73,870	1.9%	249,830	1.4%	448,690	1.6%
2065	136,650	1.8%	81,090	1.9%	267,980	1.4%	485,720	1.6%
2070	149,400	1.8%	89,020	1.9%	287,450	1.4%	525,870	1.6%
2075	163,340	1.8%	97,730	1.9%	308,340	1.4%	569,410	1.6%
2080	178,580	1.8%	107,290	1.9%	330,740	1.4%	616,610	1.6%
2085	195,240	1.8%	117,780	1.9%	354,770	1.4%	667,790	1.6%
2090	213,460	1.8%	129,300	1.9%	380,550	1.4%	723,310	1.6%
2095	233,380	1.8%	141,940	1.9%	408,200	1.4%	783,520	1.6%
2100	255,160	1.8%	155,820	1.9%	437,860	1.4%	848,840	1.6%
1995-2025 avg. annual rate		1.8%		1.9%		1.4%		1.6%

Sources: Colorado Department of Local Affairs; University of New Mexico; Dornbusch & Co.

Table 4

REGIONAL WATER USE PROJECTIONS (Acre-Feet per Year)

Year	La Plata County, CO	Montezuma County, CO	San Juan County, NM	3 County Total
1995	7,858	4,404	20,126	32,388
2000	8,934	4,876	21,741	35,551
2005	10,125	5,443	23,415	38,982
2010	11,246	6,031	25,186	42,463
2015	12,127	6,626	27,090	45,842
2020	12,830	7,188	29,088	49,105
2025	13,420	7,709	31,078	52,207
2030	14,673	8,463	32,885	56,022
2035	16,042	9,291	35,275	60,609
2040	17,540	10,200	37,837	65,577
2045	19,176	11,196	40,586	70,959
2050	20,965	12,291	43,536	76,792
2055	22,922	13,492	46,700	83,114
2060	25,061	14,811	50,092	89,965
2065	27,399	16,259	53,732	97,390
2070	29,956	17,849	57,635	105,440
2075	32,751	19,595	61,824	114,170
2080	35,806	21,512	66,315	123,634
2085	39,147	23,616	71,133	133,896
2090	42,800	25,925	76,302	145,028
2095	46,794	28,460	81,846	157,100
2100	51,161	31,243	87,793	170,197

Source: Table 3; Solley et al.; Dornbusch & Co.

Table 5
ANIMAS - LA PLATA PROJECT EIS
WATER USE SCENARIOS FOR SOUTHERN UTE AND UTE MOUNTAIN UTE TRIBES

SOUTHERN UTE TRIBE

Type of Use	Specific Use	General Location	Township, Range & Section	Water Use (acre-feet/year)	Point of Diversion
M&I	Housing (Florida Mesa)	Florida Mesa	T34N, R9W, S1-3,10-12	140	Ridges Basin Reservoir
	Housing (Animas)	Animas River Basin	T33N, R10W, S1,12	140	Ridges Basin Reservoir
	Housing (La Plata)	La Plata River Basin	T33N, R12W, S19	140	Ridges Basin Reservoir
	Industrial Park	Animas River Basin	T34N, R9W, S5-6 or T34N, R10W, S13, 24	40	Ridges Basin Reservoir
	Resort Hotel complex	Ridges Basin Reservoir	T35N, R9W or R10W	620	Ridges Basin Reservoir
	Regional water supply	Region		up to 19,980	
Energy	Coal Mine	Picnic Flats Area	T32N, R11W, S6 T32N, R12W, S1,11-14,23-4 T33N, R11W, S2-3,8-9.17-20.30-31 T33N, R12W, S36	415	Animas River at Bondad
	Coal Powerplant	Picnic Flats Area	same as coal mine	13,500	Animas River at Bondad or La Plata River or San Juan River
Livestock	Livestock water	Widespread		10	tap into other supply lines
Wildlife	Wildlife water	Widespread		5	tap into other supply lines

UTE MOUNTAIN UTE TRIBE

Type of Use	Specific Use			Water Use (acre-feet/year)	Point of Diversion
M&I	Housing (La Plata)	La Plata Basin vicinity	T32N, R13 1/2W, S9-13	280	Ridges Basin Reservoir
	Resort Hotel complex	Mancos River Basin vicinity	T33N, R16W, S20-34	610	Ridges Basin Reservoir
	Resort Hotel complex	La Plata Basin vicinity	T35N,R11W,S25,36	610	Ridges Basin Reservoir
	Dude Ranch	La Plata Basin vicinity	T35N,R11W,S29	5	Ridges Basin Reservoir
	Regional water supply	Region		up to 19,980	
Energy	Gas Powerplant	New Mexico part of Resv.	T31N, R15W +/-	2,300	Ridges Basin to La Plata R. or San Juan River
Livestock	Livestock water	Widespread		15	tap into other supply lines
Wildlife	Wildlife water	Widespread		5	tap into other supply lines

Source: Dornbusch & Co.

The storage capacity at Ridges Basin Reservoir will add more flexibility to such uses of tribal water, creating additional value for that water. Public water supply systems, for example, typically experience peak water demands during the summer months, when the streamflow available for direct diversion may be limited. Similarly, fish habitats may require minimum flows that may not be available during part of the year. The storage capacity allows seasonal shifts of streamflow, helping to meet peak demands and to avoid critical low flows. In addition, storage can also shift water supplies between years, providing some water for public water systems or for environmental purposes during dry years.

The increase in water demand induced by regional growth will tend to drive up the opportunity cost[1] of water to regional farmers and ranchers. Over time, some of the farmers and ranchers may decide to take advantage of the economic opportunity and sell their water rights. If enough farmers and ranchers decide to sell their rights it would change the character of the whole area, which would be contrary to local wishes. Maintaining the agricultural character of the area by preserving irrigated land is discussed among the goals and objectives of most of the districts in La Plata County [Hall]. To the extent that the tribal water can be used to meet the regional demand it would protect the agricultural community and forestall this regional change in character.

Legal constraints presently limit the area to which the tribes may lease their water. However, these constraints may change over time in response to changing needs of the public. Even if today's constraints remained in full effect, southwestern Colorado itself is growing rapidly enough to provide a market for tribal water in the long run. The greater the allowed market area, the sooner the tribes' water will be in demand.

H. NO ACTION ALTERNATIVE

1. Water Rights Litigation. The modified Animas-La Plata Project is the basis for the 1986 Colorado Ute Indian Water Rights Final Settlement Agreement and the Colorado Ute Indian Water Rights Settlement Act of 1988. In the No Action Alternative these agreements could be voided. The two tribes and the other water users on the Animas and La Plata Rivers would have the option to commence litigation or to renew the General Stream Adjudication in the District Court, Water Division No. 7, State of Colorado. In that event the two tribes and the United States as trustee for the tribes would present evidence of tribal past, present and future water uses, including irrigation. The tribes would be seeking senior rights, with priority dates of either 1868 or "Time Immemorial." The other parties would also be required to present evidence supporting their claims. General Stream Adjudications typically span several years and can cost the major parties tens of millions of dollars. To the extent that the tribes succeeded in

[1] Opportunity cost of water is the value of water in its best alternative use. For example, if water was worth $10 an acre-foot to a rancher but he/she could sell the water right to a city for $20 an acre-foot, then the opportunity cost of the water would be $20 per acre-foot.

asserting their claims they would then be able to enforce the seniority of their water rights, thereby shutting down junior users.

2. Damages Litigation. The two Colorado Ute Tribes agreed in the 1986 Settlement Agreement to waive claims for monetary damages if the Animas-La Plata Project were built. [U.S. Bureau of Reclamation, 1996, Attachment V, Part B, Article VI, Section A.1.e] If the ALP Project is not built then the tribes may institute actions against the United States and other parties for damages the tribes may have suffered. In the event that monetary damages are awarded, however, they would be offset by any moneys already paid into the tribal development funds [Ibid.]. The Colorado Ute Indian Tribes may have other issues, in addition to claims for monetary damages, that they were willing to subsume in the context of a general settlement agreement. If ALP is not built, however, the Tribes may decide to assert these other issues.

3. Water Rights Attributes. If the negotiated Settlement Agreement is not completed and the tribes litigate their water rights then the rights ultimately awarded the tribes may not have the limitations that rights under the Settlement Agreement would have. For example, under the Settlement Agreement the tribes agree to subordinate their project reserved water rights to all water rights senior to the Animas-La Plata Project [U.S. Bureau of Reclamation, 1996, Attachment V, p. 15]. An adjudicated tribal water right, in contrast, would likely carry an 1868 or earlier priority date. As a further example, the tribes agreed in the Settlement Agreement to be bound by State Law in determining whether it could lease water off the reservations or outside the State [U.S. Bureau of Reclamation, 1996, Attachment V, p. 60]. In the absence of the Settlement Agreement the tribes could contend that they were subject only to federal law in determining where they were permitted to lease water.

4. Change in Local Character. As mentioned in section G, above, most districts in La Plata County have expressed a wish to preserve irrigated agriculture in order to maintain the agricultural character of the area. The No Action Alternative would affect this goal in two ways. First, to the extent that the tribes were awarded senior water rights through a water rights adjudication, the tribes would have the right to their water at whatever time of year it was needed. Without the storage from the ALP Project the tribes would thereby have first call on the stream flow, even during the summer months. Other ranchers or irrigators might be forced to cease diverting water during low flow periods in order for the tribes to take their entitlements and in order to maintain a minimum flow for the fishery. Second, significant regional growth may occur even if ALP is not built, thereby increasing the demand for water. Without ALP to help provide the water for municipal needs, the growing cities may seek to purchase farms and ranches with the water rights they need, thus increasing the pressure to diminish agriculture.

5. Environmental Issues. The federal participation in the Settlement Agreement and ALP itself provides the requisite federal action that triggers the NEPA and ESA requirements. Without the Agreement or a federally-funded ALP, the tribes could decide to use their own funds to build irrigation or other projects. If such projects could be

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constructed without any federal involvement, action or nexus then the projects would not be subject to federal environmental requirements. If it were consistent with the tribes' adjudicated rights, the tribes could decide to deplete more water than the 57,100 afy depletion in the Fish & Wildlife Service "Reasonable and Prudent Alternative" [Federal Register, p. 177]. The tribes would also not necessarily be required to consider selenium concentrations in any irrigation return flow from a tribally-funded project.

6. Recovery Implementation Program. The San Juan River Basin Recovery Implementation Program (SJRBRIP) is designed to make it possible for San Juan River Basin water users to continue their existing and projected water uses while protecting endangered fishes. The success of the SJRBRIP is dependent upon the participation of the Colorado Ute Indian tribes. If ALP is not built the tribes have the option under the 1986 Settlement Agreement of asserting their claim to very senior water rights in the San Juan River Basin. In that event other, more junior, water users would bear the burden of limiting depletions in order to protect fish flows and meet ESA requirements. This burden would fall not only on new users in the Basin, but would also apply to existing users whose withdrawals become subject to NEPA or ESA requirements. Any user who contracts for federal project water might become subject to these requirements under some circumstances. Federal projects include the San Juan-Chama Project and the Navajo, Jackson Gulch, Lemon and Vallecito Reservoirs, and control a substantial proportion of the water in the San Juan Basin. The issue of exactly who would have to forego depletion rights to satisfy the ESA would very likely become a protracted interstate court battle.

7. Alignment of Interests Between Tribes and States. The two decade period of negotiating between the Colorado Ute Indian Tribes and the state and local entities has produced at least two byproducts besides the Settlement Agreement itself. First, the protracted period of negotiation fostered a level of mutual understanding and trust that would not have been possible to achieve if the approach had been litigation. And second, the prospect of actually having a project that ensures "wet water" to the tribes has made the tribes content to accept state law constraints and to support Colorado, New Mexico and other Upper Colorado River Basin states in their dealings with the Lower Basin. If the ALP Project were not built then the tribes would very likely re-examine their positions on Colorado Basin issues and reconsider where their self-interests lay. And if the lack of ALP Project re-opens water rights litigation, then the goodwill and trust that have accumulated will suffer.

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